

Amendment under 37 C.F.R. §1.111
Serial No. 10/662,384
Attorney Docket No. 031111

REMARKS

Claims 1-16 are currently pending. Claims 1-3 and 7-13 have been withdrawn from consideration. Claims 15 and 16 have been added herein. Support for the new claims is found at page 8, line 23 to page 9, line 12 of the present specification. Applicants' undersigned representative thanks Examiner Sefer for the courtesies extended in the personal interview of January 30, 2006. Applicants' separate record of the substance of the interview is incorporated herein.

Applicants' Response to Claim Rejections under 35 U.S.C. §103(a)

The Office Action has maintained the rejection of claims 4-6 under 35 U.S.C. §103(a) as being unpatentable over **Umeda** in view of **Wristers/Karasawa**. During the course of the interview, applicants' representative discussed the existence ratio of subject nitrogen atoms to a total number of nitrogen atoms in the silicon oxide film and the remarks of the Office Action of November 18, 2005 that "the specification contains no disclosure of the critical nature of the claimed arrangement or any unexpected results arising there from." Specifically, the range limitation as to the subject nitrogen structure having an existence ration of less than 20% was discussed with reference to figure 6 and specification pages 12-13. As pointed out in the course of the interview, these disclosures illustrate the claimed limitation is not taught or suggested by the cited prior art.

As set forth on page 13, lines 10-13 as the existence ratio of the NSi_3 structure to total nitrogen atoms becomes lower than about 0.05 as illustrated in Figure 6, $G_m \times \text{Teff}$ becomes "abruptly small." This is clearly seen in Figure 6 by the abrupt change in the slope of the curve.

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In Figure 6, the slope of the curve abruptly changes at $x=0.05$ (i.e. when the existence ratio of the NSi_3 structure equals 20%). When SiON is used as a material of a gate insulating film, mutual conductance G_m drops. The acceptable value of rate drop is about 10%. Considering the ideal device in which the existence ratio of the NSi_3 structure is extremely small, the $G_m \cdot T_{\text{eff}}$ of the ideal device is estimated at 2.8×10^{-3} , the saturation value of the trend illustrated in Figure 6. In figure 6, the 10% degraded value of the $G_m \cdot T_{\text{eff}}$ of the ideal device is about 2.52×10^{-3} . This is the value corresponding to $x=0.05$ which is the claimed existence ratio of the NSi_3 structure of 20%.

There is no teaching or suggestion of this limitation in the prior art and the specification clearly sets forth that the claimed range is relevant to the invention. Wherefore, in light of the above, favorable reconsideration is respectfully requested.


In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

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If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,
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